

Claims

[c1] I claim:

1. An armrest for a seat having a seat bottom with a back member that may be selective rotated between a substantially vertical position to a substantially horizontal position with respect to said seat, said back member having a first pivot pin attached thereto that moves in an arc as said back member is rotated between said vertical and horizontal positions, said armrest comprising:
a housing defined by parallel first and second side walls that each have a first end and a second end with an first opening adjacent said second end, said housing being located on said back member by said first pivot pin extending through said first opening in said first and second side walls such that said first end of said housing may pivot with respect to said first pivot pin;
a first plate fixed to said first pivot pin and located between said first and second side walls, said first plate having a first surface that defines a first stop and a second surface that defines a second stop;
a second plate fixed to said first pivot pin and located between said first plate and said second side wall, said second plate having an arcuate surface thereon with a

first plurality of teeth thereon that extend from a first location to a second location, said first location being matched with said stop and said second location being associated with said second stop;

a first lever having a first end and a second end, said first end being fixed to said first end of said first side wall to define a cantilevered beam to position a second plurality of teeth thereon adjacent said second end on said first plurality of teeth on said second plate;

a second lever having a first end and a second end, said second end having an circular slot located adjacent said second end;

a ball located in said circular slot;

a second pivot pin secured to said first and second side walls and extending through said second lever to locate said ball adjacent said second plate with said ball in tangential engagement with said second side wall and in contact engagement with said first lever; and

an actuator for applying an input force to said first end of said second lever causing said second end to pivot about said second pivot pin and move said ball on said second side wall such that a force is applied to said first lever through said contact engagement of said ball that causes said first lever to laterally move toward said first side wall as a function of the capability of said cantilevered beam to bend such that said second plurality of

teeth move out of engagement with said first plurality of teeth and are aligned on said first plate between said first stop and said second stop and thereafter permit said first end of said housing to be moved by pivoting about said first pivot pin to a desired alignment with respect to said seat, said first lever on termination of said input force resiliently returning to alignment with said second plate such that said second plurality of teeth mesh with said first plurality of teeth to retain said first end of said housing in said desired alignment.

- [c2] 2. The armrest as recited in claim 1 further including:
a first guide connected to said second end of said first lever to prevent movement of said second end with respect to said second plate that would permit said second plurality of teeth from radially moving with respect to said first plurality of teeth.
- [c3] 3. The armrest as recited in claim 1 wherein the arcuate distance between said first location and said second location of said first plurality of teeth encompasses an entire circle.
- [c4] 4. The armrest as recited in claim 1 wherein said arcuate distance between said first location and said second location is such that said first end of said housing may be aligned in a horizontal plane with respect to said seat

when said back member is rotated between said vertical position and said horizontal position.

The armrest as recited in claim 1 wherein said arcuate distance between said first location and said second location is such that said first end of said housing may be aligned in a horizontal plane with respect to said seat when said back member is rotated between said vertical position and said horizontal position.

[c5] 5. The armrest as recited in claim 1 further including: a second guide connected to said second side wall and engaging said second lever adjacent said first end to assist in retaining said second lever in a parallel alignment with said second side such that said ball always remains in tangential contact with said second side wall.

[c6] 6. The armrest as recited in claim 1 wherein said engagement of said second plurality of teeth with said first plurality teeth essentially consists of the entire second plurality of teeth at every desired alignment.

[c7] 7. The armrest as recited in claim 1 wherein said first side wall is separated from said second side wall by uniform member that extends from said first end to said second end such that said housing has a U-shape.

[c8] 8. An armrest for a seat having a seat bottom with a

back member that may be selective rotated between a substantially vertical position to a substantially horizontal position with respect to said seat, said back member having a first pivot pin attached thereto that moves in an arc when said back member is rotated between said vertical position and said horizontal position, said armrest comprising:

a housing defined by parallel first and second side walls that each have a first end and a second end with an first opening adjacent said second end, said housing being connected to said back member by locating said first pivot pin in the first openings in said first and second side walls such that said first end of said housing may pivot about said first pivot pin;

a plate fixed to said first pivot pin and located between said side wall and said second side wall, said plate having a first plurality of radial teeth thereon on an arcuate peripheral surface thereof;

a first lever having a first end and a second end, said first end being fixed to said first end of said first side wall to define a cantilevered beam, said first lever having an opening adjacent said second end with a second plurality of inwardly extending radial teeth, said second plurality of teeth meshing with said first plurality of teeth;

a second lever having a first end and a second end, said

second end having an circular slot therein that is located adjacent said second end;
a ball located in said circular slot;
a second pivot pin secured to said first and second side walls and extending through said second lever to locate said ball adjacent said plate with said ball in tangential engagement with said second side wall and in contact engagement with said first lever; and
an actuator for applying an input force to said first end of said second lever causing said second end to pivot about said second pivot pin and move said ball on said second side wall such that a force is applied to said first lever through said contact engagement of said ball that causes said first lever to laterally move toward said first side wall as a function of the resiliency of said cantilevered beam such that said second plurality of teeth move out of mesh engagement with said first plurality of teeth and thereafter permit said first end of said housing to pivot about said first pivot pin to a desired alignment with respect to said seat, said first lever on termination of said input force resiliently returning said second plurality of teeth to meshing engagement with said first plurality of teeth to retain said first end of said housing in said desired alignment.

[c9] 9. The armrest as recited in claim 8 further comprising:

a guide connected to said second side wall and engaging said second lever adjacent said first end to assist in retaining said second lever in a parallel alignment with said second side such that said ball remains in tangential contact with said second side wall.

[c10] 10. The armrest as recited in claim 9 wherein said meshing engagement of said second plurality of teeth with said first plurality teeth essentially consists of the entire second plurality of teeth at every desired alignment.

[c11] 11. The armrest as recited in claim 10 wherein said opening in said opening said second end of the second lever has a first mean radius that is larger than a second mean radius for the peripheral surface of said plate such that said first and second plurality of teeth mesh to hold said housing in a fixed position with respect to said first pivot pin but allows lateral movement of said second end as a result of said ball acting on said first lever permits said second plurality of teeth to be disengaged from said first plurality of teeth and allow said first end of said housing to pivot about said first pivot pin.

[c12] 12. An armrest for a seat having a bottom member with a back member that may be selective rotated between a substantially vertical position to a substantially horizontal position with respect to said bottom member, said

back member having a first pivot pin attached thereto that moves in an arcuate plane when said back member is rotated between said vertical position and said horizontal position, said armrest comprising:

a housing defined by parallel first and second side walls that each have a first end and a second end with an first opening adjacent said second end, said housing being connected to said back member by locating said first pivot pin in the first openings in said first and second side walls such that said first end of said housing may pivot about said first pivot pin;

a plate fixed to said first pivot pin and located between said side wall and said second side wall, said plate having an arcuate peripheral surface with a first plurality of radial teeth thereon;

a first lever having a first end and a second end, said first end being fixed to said first end of said first side wall to define a cantilevered beam, said first lever having an opening adjacent said second end with a second plurality of inwardly extending radial teeth thereof, said second plurality of teeth meshing with said first plurality of teeth;

a second lever having a first end and a second end, said second end having a tapered radial projection located adjacent said second end, said tapered radial projection having an apex that is located near a top of said second

lever;

a second pivot pin secured to said first and second side walls and extending through said second lever to locate said radial projection adjacent said plate with said apex engaging said first lever;

an actuator for applying an input force to said first end of said second lever causing said second end to pivot about said second pivot pin and move said tapered radial projection such that a force is applied to said first lever that causes said first lever to laterally move toward said first side wall as a function of the resiliency of said cantilevered beam such that said second plurality of teeth move out of mesh engagement with said first plurality of teeth and permit said first end of said housing to pivot about said first pivot pin to a desired alignment with respect to said seat, said first lever on termination of said input force resiliently returning said second plurality of teeth to meshing engagement with said first plurality of teeth to retain said first end of said housing in said desired alignment.

- [c13] 13. An armrest for a seat having a seat bottom with a back member that may be selective rotated between a substantially vertical position to a substantially horizontal position with respect to said seat, said back member having a pivot pin attached thereto that moves in an arc

when said back member is rotated between said vertical position and said horizontal position, said armrest comprising:

a housing defined by parallel first and second side walls that each have a first end and a second end with an first opening adjacent said second end, said housing being connected to said back member by locating said pivot pin in the first openings in said first and second side walls such that said first end of said housing may pivot about said first pivot pin;

a plate fixed to said pivot pin and located between said side wall and said second side wall, said plate having a first plurality of radial teeth thereon on an arcuate peripheral surface thereof;

a lever having a first end and a second end, said first end being fixed to said first end of said first side wall to define a cantilevered beam, said lever having an opening adjacent said second end with a second plurality of inwardly extending radial teeth, said second plurality of teeth meshing with said first plurality of teeth;

an actuator having a first end and a second end, said second end having an circular slot therein that is located adjacent said second end;

a ball located in said circular slot; and

a guide surrounding said second lever to locate said ball adjacent said plate with said ball in tangential engage-

ment with said second side wall and in contact engagement with said first lever, said actuator receiving an input force through said first end that is transferred to said second lever causing said second end to move said ball on said second side wall such that a force is applied to said lever through said contact engagement causing said lever to laterally move toward said first side wall as a function of the resiliency of said cantilevered beam such that said second plurality of teeth move out of mesh engagement with said first plurality of teeth and thereafter permit said first end of said housing to pivot about said pivot pin to a desired alignment with respect to said seat, said lever on termination of said input force resiliently returning said second plurality of teeth to meshing engagement with said first plurality of teeth to retain said first end of said housing in said desired alignment.

- [c14] 14. The armrest as recited in claim 13 further including a spring that acts on said actuator to maintain said ball in tangential engagement with said second side wall and in contact engagement with said lever.